

## **METADATA FOR THE 2004 SUTTER COUNTY LAND USE SURVEY DATA**

### **Originator:**

California Department of Water Resources

### **Date of Metadata:**

August 15, 2006

### **Abstract:**

The 2004 Sutter County land use survey data set was developed by DWR through its Division of Planning and Local Assistance (DPLA). The data was gathered using aerial imagery and extensive field visits, the land use boundaries and attributes were digitized, and the resultant data went through standard quality control procedures before finalizing. The land uses that were gathered were detailed agricultural land uses, and lesser detailed urban and native vegetation land uses. The data was gathered and digitized by staff of DWR's Central District and the quality control procedures were performed jointly by staff at DWR's DPLA headquarters and Central District.

The finalized data includes DWG files (land use vector data) and shape files (land use vector data).

### **Purpose:**

This data was developed to aid in DWR's efforts to continually monitor land use for the main purpose of determining the amount of and changes in the use of water.

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**Data Development:**

1. The county was surveyed with a combination of 2003 aerial digital imagery and imagery previously used in the 1998 Sutter land use survey. The 2003 images were converted to ortho-rectified quad sized files with a 3 meter resolution. The 1998 imagery has a 4 meter resolution (further information on the 1998 imagery can be found in the metadata for the 1998 Sutter County land use survey).
2. The land use boundaries were taken from the 1998 Sutter County survey, and edited as appropriate with the newer imagery.
3. These images and land use boundaries were copied onto laptop computers and some where printed as quad sized photo sheets and used as field collection tools. The staff took these laptops and photo sheets in the field and virtually all the areas were visited to positively identify land use. Site visits occurred in July through September 2004. Land use codes were digitized directly into the laptop computers using AUTOCAD or hand written directly on the photo sheets. Any land use boundary changes were noted and corrected back in the office. Final boundaries were checked against the most current 2004 USDA, NAIP 2 meter imagery for Sutter County.
4. After quality control/assurance procedures were completed on each file (DWG), the data was finalized for the summer survey.
5. Satellite imagery (Landsat 7) from March 2004 was used to further process the data. DWR wanted to capture any additional acres of grain that might be grown prior to the survey field visits. DWR reviewed all fallow, cucurbits, and corn fields from the summer survey to identify possible winter grain fields.

Summer identified corn, cucurbits or fallow fields were compared to the same fields in the March(spring) 2004 image. If those fields visibly showed grain at that time their attributes were edited to reflect additional winter grain.

A final county wide shapefile was created that incorporated the satellite image identified spring crops.

**Data Accuracy:**

The land use boundaries were drawn on-screen in AUTOCAD using the digital orthophoto quads as a backdrop. The resultant digital line work has an accuracy of 50 feet.

The land use attribute accuracy is very high because almost every delineated field is visited by a surveyor. But, the accuracy is less than 100 percent since some errors must have occurred. There are two possible sources of attribute errors which are:

- 1) Misidentification of land use crop types in the field.
- 2) Inputting an incorrect attribute code into the laptop computer.

#### **Projection Information:**

The data (DWG and shape files) are in a transverse mercator projection, with identical parameters to UTM projections, except the central meridian is -120 degrees (120 degrees west). For comparison, UTM 10 has a central meridian of 123 degrees west, and UTM 11 has a central meridian of 117 degrees west. This projection allows virtually all of the geographic area of California to be in one 6 degree zone (as opposed to two zones, UTM 10 and 11).

Projection: Transverse Mercator  
Datum: NAD27  
Units: Meter  
Scale Reduction: 0.9996  
Central Meridian: 120 degrees west  
Origin Latitude: 0.00 N  
False Easting: 500,000  
False Northing: 0.00

#### **Land Use Attributes:**

All land use attributes were coded using the Department's Standard Land Use Legend dated March 1999 (98legend.pdf). The legend explains in detail how each delineated area is attributed in the field, and what the coding system is.

The actual land use coding given in the legend is different in arrangement than the codes that result from the digitizing process. The file attributes.pdf is a detailed explanation of the coding system from the legend and the codes that end up in digitized form in the database files associated with the shape files.

#### **Information on the AUTOCAD (DWG) Files:**

The land use data is available in AUTOCAD 12 format by quad, with one file per quad. The file naming convention is 04SUXXXX.DWG, where XXXX is the DWR quadrangle number. For example, file 04SU2323.DWG is the AUTOCAD drawing file for the 2004 Sutter County land use survey for quadrangle 2323 (the Sutter quad).

Every quadrangle file has identical layers, nomenclature, and line colors. They are as follows:

Layer	Description	Color
0	AutoCAD's default layer	White
CQN	California DWR quad number	Cyan
GSN	USGS quad number	Cyan

LUB	Land use boundary lines	Yellow
LUC	Land use codes for GRASS	White
LUT	Visible land use text	Green
QB	The quad's boundary	White
QN	Quad name	Cyan

Following is an explanation of the attributes (for each delineated area) in the LUC layer of each quad file:

ACRES:	Number of acres in the delineated area (may or may not be present)
WATERSOURC:	The type of water source used for the delineated area
MULTIUSE:	Type of land uses within the delineated area
CLASS1:	The class for the first land use
SUBCLASS1:	The subclass for the first land use
SPECOND1:	The special condition for the first land use
IRR_TYP1:	Irrigated or non-irrigated, and irrigation system type for the first land use
PCNT1:	The percentage of land associated with the first land use
CLASS2:	The class for the second land use
SUBCLASS2:	The subclass for the second land use
SPECOND2:	The special condition for the second land use
IRR_TYP2:	Irrigated or non-irrigated, and irrigation system type for the second land use
PCNT2:	The percentage of land associated with the second land use
CLASS3:	The class for the third land use
SUBCLASS3:	The subclass for the third land use
SPECOND3:	The special condition for the third land use
IRR_TYP3:	Irrigated or non-irrigated, and irrigation system type for the third land use
PCNT3:	The percentage of land associated with the third land use

#### **Information on the Shape Files:**

Shape files were created for each quad, and one for the whole survey area. The naming convention used for the quad DWG files is used for the quad shape files (for example, 04SU2323.shp, 04SU2323.shx, and 04SU2323.dbf for quad number 2323, is the Sutter quad). The name of the shape file for the whole survey area is 04SU.shp (and .dbf and .shx). The following is an explanation of the land use attributes in the DBF files:

BL_X:	This is the X coordinate of the interior point in the delineated area
BL_Y:	This is the Y coordinate of the interior point in the delineated area
ACRES:	Number of acres in the delineated area (may or may not be present)
WATERSOURC:	The type of water source used for the delineated area

MULTIUSE:	Type of land uses within the delineated area
CLASS1:	The class for the first land use
SUBCLASS1:	The subclass for the first land use
SPECOND1:	The special condition for the first land use
IRR_TYP1A:	Irrigated or non-irrigated for the first land use
IRR_TYP1B:	Irrigation system type for the first land use
PCNT1:	The percentage of land associated with the first land use
CLASS2:	The class for the second land use
SUBCLASS2:	The subclass for the second land use
SPECOND2:	The special condition for the second land use
IRR_TYP2A:	Irrigated or non-irrigated for the second land use
IRR_TYP2B:	Irrigation system type for the second land use
PCNT2:	The percentage of land associated with the second land use
CLASS3:	The class for the third land use
SUBCLASS3:	The subclass for the third land use
SPECOND3:	The special condition for the third land use
IRR_TYP3A:	Irrigated or non-irrigated for the third land use
IRR_TYP3B:	Irrigation system type for the third land use
PCNT3:	The percentage of land associated with the third land use
UCF_ATT:	Concatenated attributes from MULTIUSE to PCNT3

#### **Important Points about Using this Data Set:**

1. The land use boundaries were drawn on-screen using orthorectified imagery. They were drawn to depict observable areas of the same land use. They were not drawn to represent legal parcel (ownership) boundaries, or meant to be used as parcel boundaries.
2. This survey was created as a "snapshot" in the summer, and further improved by the addition of spring crops found through the use of satellite imagery.

There still could be fields where there were crops grown before or after the field survey. The surveyor may not have been able to detect them from the field or the photographs, and the satellite imagery processing may not have identified the spring crop. Thus, although the data is very accurate for the summer, and probably the spring, it may not be an accurate determination of what was grown in the fields for the whole year.

3. If the data is to be brought into a GIS for analysis of cropped (or planted) acreage, two things must be understood:
  - a. The acreage of each field delineated is the gross area of the field. The amount of actual planted and irrigated acreage will always be less than the gross acreage, because of ditches, farm roads, other roads, farmsteads, etc. Thus, a delineated corn field may have a GIS calculated acreage of

40 acres but will have a smaller cropped (or net) acreage, maybe 38 acres.

- b. Double and multicropping must be taken into account. A delineated field of 40 acres might have been cropped first with grain, then with corn, and coded as such. To estimate actual cropped acres, the two crops are added together (38 acres of grain and 38 acres of corn) which results in a total of 76 acres of net crop (or planted) acres.
4. Water source information was not collected for this survey.
  5. Not all land use codes will be represented in each survey.